

**Amendments to the Claims**

A full list of the claims is as follows:

1. (Currently Amended) A method of affecting chronic pain in a patient in need thereof comprising:
  - implanting a stimulator in a target site of the brain;
  - detecting a bodily activity of the body associated with the chronic pain; and
  - providing a stimulation signal to the stimulator in response to the detected bodily activity to stimulate the target site to affect chronic pain in the patient, the stimulation signal having the following parameters:
    - a voltage between about 1V to about 15V;
    - a frequency between about 2 Hz and 2500Hz; and
    - a pulse width between about 10 microseconds to about 1,000 microseconds,

the target site selected from the group consisting of the pre-frontal cortex, orbitofrontal cortex, anterior limb of the internal capsule, insular cortex, secondary somatosensory cortex, cingulate cortex, anterior cingulate cortex, ~~and~~ posterior cingulate cortex, inferior frontal gyrus, middle frontal gyrus, superior frontal gyrus, medial frontal gyrus, parahippocampal gyrus, precuneus, amygdala, and hippocampus.
2. (Original) The method of claim 1, wherein the target site is the pre-frontal cortex.
3. (Original) The method of claim 1, wherein the target site is the orbitofrontal cortex.
4. (Original) The method of claim 1, wherein the target site is the anterior limb of the internal capsule.
5. (Original) The method of claim 1, wherein the target site is the insular cortex.
6. (Cancelled)

7. (Original) The method of claim 1, wherein the target site is the secondary somatosensory cortex.
8. (Original) The method of claim 1, wherein the target site is the cingulate cortex.
9. (Original) The method of claim 1, wherein the target site is the anterior cingulate cortex.
10. (Original) The method of claim 1, wherein the target site is the posterior cingulate cortex.
11. (Original) The method of claim 1, wherein the target site is the inferior frontal gyrus.
12. (Original) The method of claim 1, wherein the target site is the middle frontal gyrus.
13. (Original) The method of claim 1, wherein the target site is the superior frontal gyrus.
14. (Original) The method of claim 1, wherein the target site is the medial frontal gyrus.
15. (Original) The method of claim 1, wherein the target site is the parahippocampal gyrus.
16. (Original) The method of claim 1, wherein the target site is the precuneus.
17. (Original) The method of claim 1, wherein the target site is the amygdala.
18. (Original) The method of claim 1, wherein the target site is the hippocampus.
19. (Currently Amended) A method of affecting chronic pain in a patient in need thereof comprising:
  - implanting a stimulator in a target site of the brain;
  - detecting a bodily activity of the body associated with the chronic pain; and

providing a stimulation signal to the stimulator in response to the detected bodily activity to stimulate the target site to affect chronic pain in the patient, the stimulation signal having the following parameters:

a voltage between about 1V to about 15V;

a frequency between about 2 Hz and 2500Hz; and

a pulse width between about 10 microseconds to about 1,000 microseconds, the target site selected from the group consisting the anterior nucleus of the thalamus, ~~intralaminar thalamic nuclei, dorsomedial nucleus of the thalamus,~~ mammillary body, lateral hypothalamus, locus coeruleus, dorsal raphe nucleus, substantia nigra pars compacta, substantia nigral pars reticulata, superior colliculus, tegmentum, ventral tegmentum, tectum, medial thalamus, nucleus accumbens, ventral striatum, and ventral pallidum.

20. (Original) The method of claim 19, wherein the target site is the anterior nucleus of the thalamus.

21. (Original) The method of claim 19, wherein the target site is the intralaminar thalamic nuclei.

22. (Original) The method of claim 19, wherein the target site is the dorsomedial nucleus of the thalamus.

23. (Original) The method of claim 19, wherein the target site is the mammillary body.

24. (Original) The method of claim 19, wherein the target site is the lateral hypothalamus.

25. (Original) The method of claim 19, wherein the target site is the locus coeruleus.

26. (Original) The method of claim 19, wherein the target site is the dorsal raphe nucleus.

27. (Original) The method of claim 19, wherein the target site is the substantia nigra pars compacta.

28. (Original) The method of claim 19, wherein the target site is the substantia nigra pars reticulata
29. (Original) The method of claim 19, wherein the target site is the superior colliculus.
30. (Original) The method of claim 19, wherein the target site is the tegmentum.
31. (Original) The method of claim 19, wherein the target site is the ventral tegmentum.
32. (Original) The method of claim 19, wherein the target site is the tectum.
33. (Original) The method of claim 19, wherein the target site is the ventral thalamus.
34. (Original) The method of claim 19, wherein the target site is the nucleus accumbens.
35. (Original) The method of claim 19, wherein the target site is the ventral striatum.
36. (Original) The method of claim 19, wherein the target site is the ventral pallidum
37. (Currently Amended) A method of affecting chronic pain in a patient in need thereof comprising:  
a) implanting a stimulator in communication with a pain circuitry target site; and  
b) providing a stimulation signal to the stimulator to stimulate the synthesis or release of an endogenous opioid to affect chronic pain in the patient.
38. (Cancelled)
39. (Canceled)
40. (Cancelled)

41. (Previously Presented) The method of claim 37, wherein the stimulator is implanted in a pain circuitry target site selected from the group consisting of the pre-frontal cortex, orbitofrontal cortex, anterior limb of the internal capsule, insular cortex, primary somatosensory cortex, secondary somatosensory cortex, cingulate cortex, anterior cingulate cortex, posterior cingulate cortex, inferior frontal gyrus, middle frontal gyrus, superior frontal gyrus, medial frontal gyrus, parahippocampal gyrus, precuneus, amygdala, and hippocampus.

42. (Previously Presented) The method of claim 37, wherein the stimulator is implanted in a pain circuitry target site selected from the group consisting of the anterior nucleus of the thalamus, intralaminar thalamic nuclei, dorsomedial nucleus of the thalamus, mammillary body, lateral hypothalamus, locus coeruleus, dorsal raphe nucleus, substantia nigra pars compacta, substantia nigra pars reticulata, superior colliculus, tegmentum, ventral tegmentum, tectum, medial thalamus, nucleus accumbens, ventral striatum, and ventral pallidum.